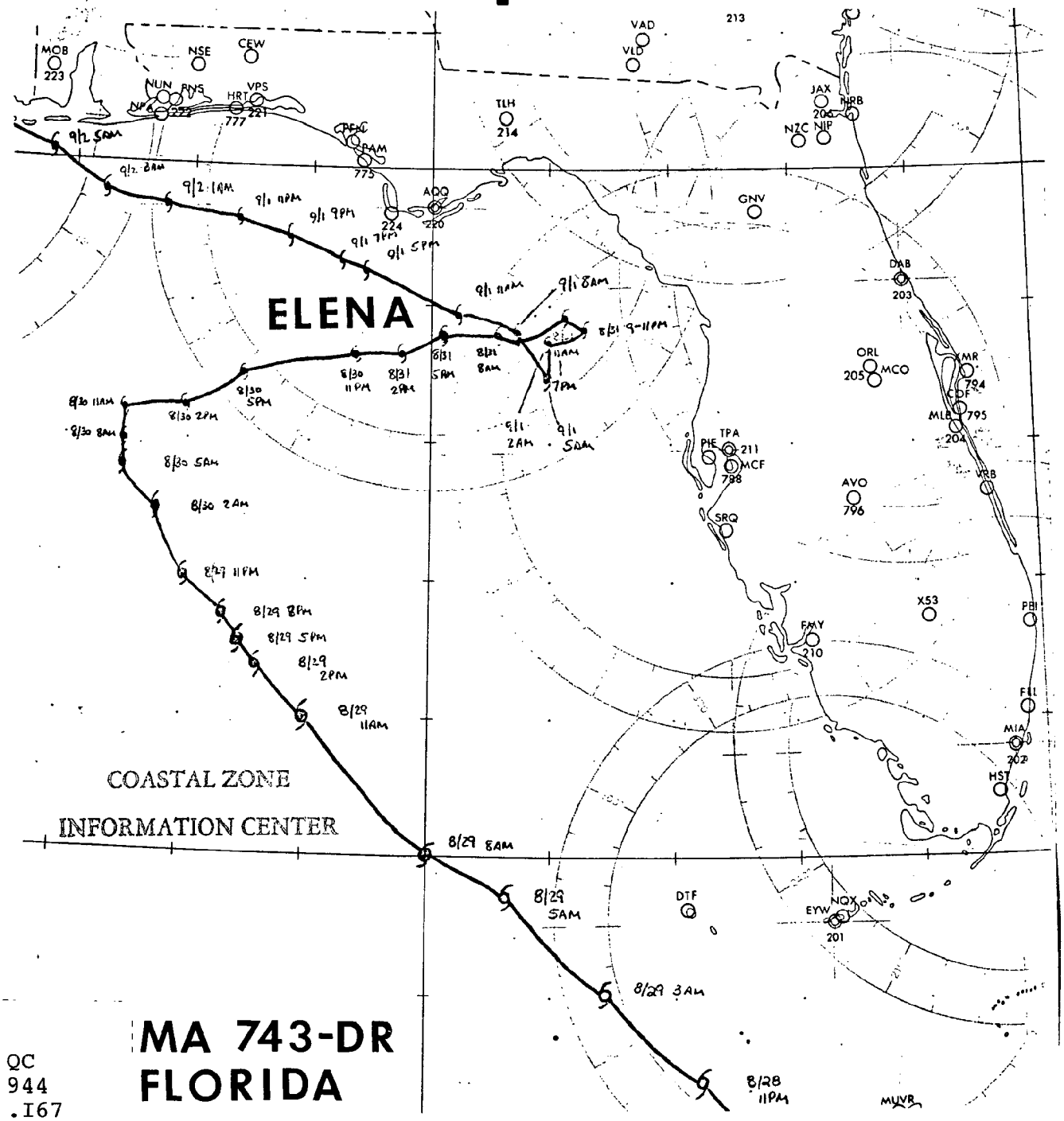
Interagency Hazard Mitigation Report



FEMA 743-DR
FLORIDA

October 2, 1985

INTERAGENCY HAZARD MITIGATION TEAM REPORT

FOR

FLORIDA

IN RESPONSE TO THE SEPTEMBER 12, 1985

DISASTER DECLARATION

FEMA-743-DR-FL

COVERING FRANKLIN, WAKULLA, DIXIE, LEVY,
HILLSBOROUGH, PINELLAS AND MANATEE COUNTIES

U.S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

October 2, 1985

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EXECUTIVE SUMMARY

On August 31, 1985, the effects of Hurricane Elena were first felt on Florida's western coast. Properties receiving the most damage were those concentrated along barrier island shorelines.

On September 12, 1985, the President determined that damage resulting from Hurricane Elena warranted a major disaster declaration in the State of Florida, FEMA-743-DR-FL. The counties of Franklin, Levy, Manatee and Pinellas were initially included within the declaration. Hillsborough, Dixie and Wakulla counties were added on September 23, 1985. All counties were eventually determined to be eligible for individual and public assistance programs under P.L. 93-288.

The Interagency Hazard Mitigation Team is recommending that emergency legislation be enacted which would require the repair of all existing seawalls be to acceptable design standards. At the same time, the Team felt that seawalls will not offer protection from major storms and that the structural integrity of new buildings should not be dependent on seawalls. In the long term, the Team is suggesting that the State and Federal governments address such items as beach nourishment; oyster bed restoration; and re-examine the velocity zone designations on the unincorporated and incorporated Pinellas County Community's Flood Insurance Rate Maps.

These recommendations are those of the Interagency Hazard Mitigation Team and are for consideration by member agencies.

This Team consisted of representatives from the Small Business Administration, Corps of Engineers, Housing and Urban Development, Department of Commerce, Environmental Protection Agency, Federal Emergency Management Agency, Department of Interior, Department of Natural Resources, Department of Environmental Regulation, Department of Community Affairs, Florida Department of Transportation, Pinellas County and Apalachee Regional Planning Council.

The FEMA Region IV Hazard Mitigation Coordinator will monitor implementation of the Team's recommendation and will prepare a 90-day Progress Report.

INTRODUCTION

This report transmits the recommendations of the Region IV Interagency Hazard Mitigation Team following the Presidential Disaster Declaration, FEMA-743-DR, State of Florida. These recommendations are being provided to the Federal Emergency Management Agency (FEMA) Regional Director, agencies that are party to the Interagency Agreement, and the affected state and local governments.

Purpose of Report

The report and recommendations of the Team are intended to provide the framework for flood hazard mitigation during the reconstruction process to reduce the potential for future flood losses.

Overview of Authority and Background

Since 1936, Federal, State and local governments have expended in excess of $12 billion for structural solutions to flood problems in the United States. In spite of this investment, flood losses have continued to rise. In an effort to stem continuing increases in disaster relief programs and development pressures within the Nation's floodplains, the Federal emphasis has shifted toward a comprehensive and coordinated approach to floodplain management.

An Office of Management and Budget Memorandum, dated July 10, 1980, provides the basis for the establishment of regional, interagency and intergovernmental hazard mitigation teams designed to promote a comprehensive approach to flood hazard mitigation during the post-flood recovery process. These teams were then formulated under the Interagency Agreement for Non-Structural Damage Reduction Measures of December 15, 1980. The Office of Management and Budget Directive requires that a report be prepared by the Team within 15 days of a Presidential Disaster Declaration, that the mitigation activities recommended in the report emphasize non-structural measures, and that Federal agencies conform their recovery actions to the recommendations of this report to the fullest extent practicable.

The report is considered to be a conceptual guide for all Federal agencies providing recovery assistance in the disaster. An interagency task force in Washington, D.C. was also established by the Interagency Agreement. The national-level task force is available to coordinate activities and facilitate funding to implement the recommendations of this report.

PART I: THE DISASTER - HURRICANE ELENA

Description of the Hurricane:

Hurricane Elena, a Category 3 storm with sustained winds of up to 125 mph became a named tropical storm near Havana, Cuba, around midnight on August 28, 1985. However, the storm never made landfall in Florida and onshore winds were generally of less than hurricane strength.

The storm then followed a steady northwest course and intensified slowly until midday on the 30th when it made an abrupt turn to the east. This course continued until the evening of the 31st when the storm stalled just 50 miles off the coast of the Florida Peninsula. During the night the hurricane made a slow loop to the southeast and then southwest before settling down on a steady west-northwest course which continued until landfall in Mississippi early on Monday, September 2nd.

Intense hurricanes will generally produce a high wall of water which impacts the coast. Hurricane Elena stalled off the Florida coast for approximately 24 hours and the sustained winds coupled with the shallow water off the coast created abnormally high tides which caused a great deal of damage along the coast.

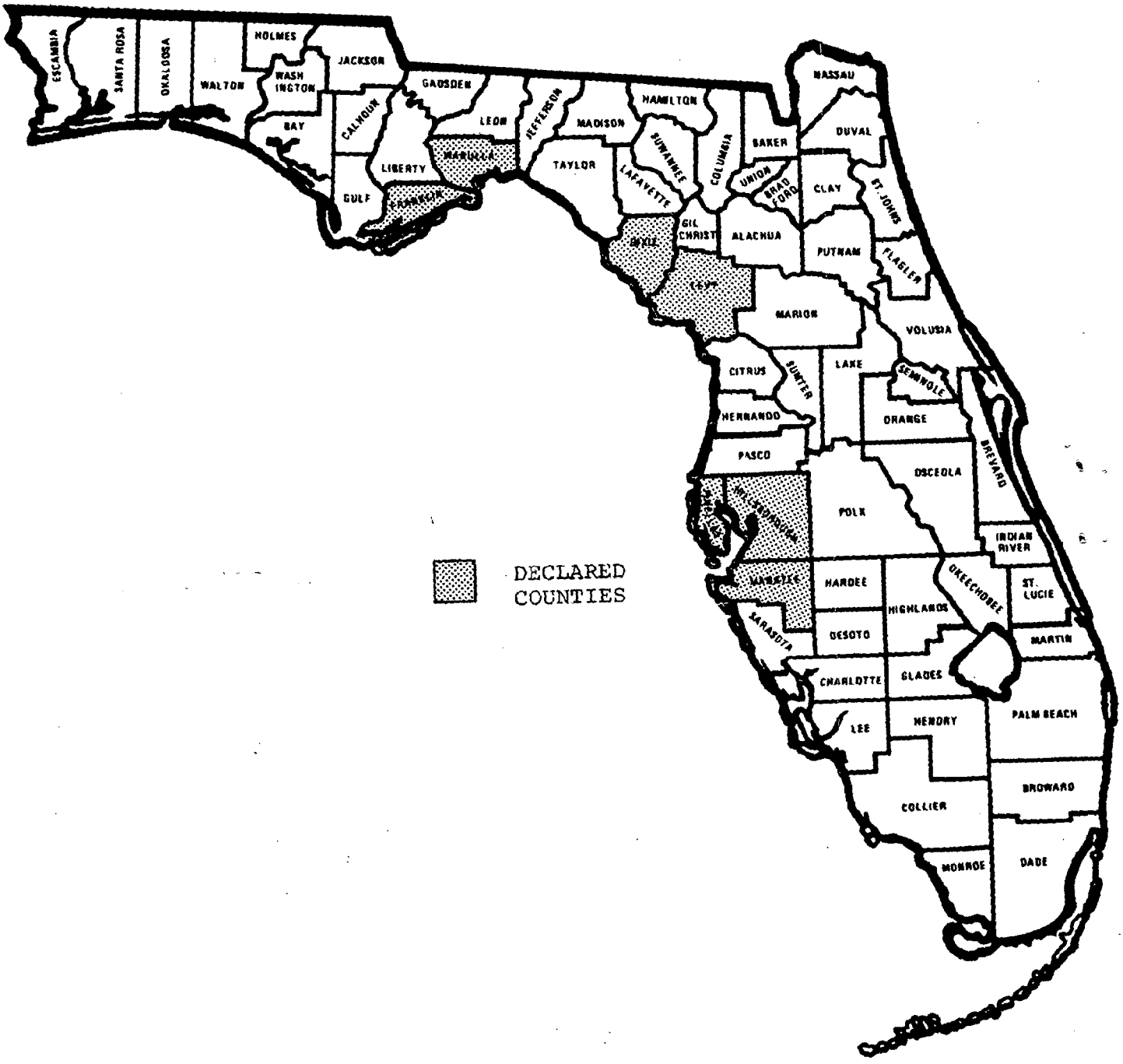
These tides reached 6-8 feet at Indian Rocks Beach. The rainfall amounts were relatively light, except in a few areas such as parts of Dixie County where up to 13 inches of rainfall was recorded.

Storm Frequency

Based on Corps of Engineers Memorandum HUR 7-120 (dated July 31, 1972), the frequency of Hurricane Elena is in the neighborhood of a 15-year storm. This frequency is based solely on the central pressure of 28.06 inches of mercury. This frequency is an approximation since many other parameters should be included, i.e., radius of maximum wind speed, wind speed and direction. To obtain an accurate frequency, a modeling effort including the above factors would be required.

Using information provided by the National Weather Service, National Oceanographic Administration and based on analysis of field data developed by Jacksonville Corps of Engineers district, the on-shore storm surge in Florida had an estimated frequency of 10-15 years. The field data was developed from measurements taken at Cedar Key in Levy County and a site in Pinellas County. The storm produced a tide of +7.8 feet (mean high water) at Cedar Key and between 3-4 feet (mean high water) in Pinellas County.

Even when considering all factors, particularly the force of the tides, this storm should not be considered a rare event. The force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SUWANNEE
COLUMBIA
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MARION
VOLUSIA
CITRUS
SUMTER
LAKE
SEMINOLE
HERNANDO
ORANGE
PASCO
OSCEOLA
BREVARD
POLK
INDIAN RIVER
HARDEE
OKEECHOBEE
ST. LUCIE
HIGHLANDS
DESOTO
MARTIN
SARASOTA
CHARLOTTE
GLADES
LEE
HENDRY
PALM BEACH
BROWARD
COLLIER
MONROE
DADE
DECLARED COUNTIES

of the tides was amplified in the Pinellas County (Tampa Bay Area) when the storm stalled for 24 hours about 60 miles off shore causing sustained winds to hold and build with each successive tide. The winds, however, never reached hurricane velocity.

Description of Damages

Damage from Hurricane Elena was caused mainly by flooding, high tides and wave action. Shoreline properties in Franklin, Wakulla, Levy, Pinellas, Manatee and Hillsborough counties were affected by saltwater flooding and wind. Inland properties in Dixie and Wakulla Counties were damaged by rainwater flooding and wind.

Damage on the barrier islands in Pinellas and Manatee counties was mainly along the Gulf front where seawalls and older homes were heavily damaged by the high tides and waves. The cities and counties around Tampa Bay suffered flooding damage from high tides and winds. Here, thousands of homes on the many finger canal neighborhoods received a foot or so of water as most had in the past.

Inland damage in Wakulla and Dixie counties was in a large part due to the heavy rainfall (13") inland. This water flowed slowly across the area towards the rivers and Gulf causing washouts where local roads impounded it. There was severe damage to the oyster beds in Franklin County where the storm caused rapid currents in Apalachicola Bay washing away the oysters and shell beds. These same currents helped wash out the causeway to St. George Island.

Evacuation

Hurricane Elena caused Florida's most massive and successful evacuation of coastal populations. State and county jurisdictions had been actively involved in the FEMA funded Tri-State Hurricane Evacuation Study and Planning effort prior to the event.

Pinellas County conducted an evacuation drill one month before Hurricane Elena occurred. The preparation paid off. Pinellas County was evacuated in only 4 hours after the evacuation order was given.

The Tampa Bay Hurricane Evacuation Plan estimated it should take 15 hours to evacuate the low-lying coastal areas of Pinellas County. While local governments should be cautious about underestimating the amount of time required for evacuation in future hurricanes they should also be congratulated for the success they achieved in this evacuation. If the storm had been preceded by heavier rain and moved more quickly toward the shore, and if more seasonal residents and tourists had been in the area, the 15 hour estimate may have been more reasonable.

Evacuation in all of the other affected counties was also accomplished smoothly with no serious injury or loss of life. Recently prepared Hurricane Evacuation Plans were used by all of the affected counties.

PART II: BACKGROUND INFORMATION

General Description of the Area

Hurricane Elena hit the coastal communities bordering the Gulf of Mexico. The winds and accompanying surge caused the greatest damage to development on the barrier islands of Manatee and Pinellas counties. The population of this region has increased from 160,000 to over 1,700,000 persons during the past 60 years. In 1921, most of the population was concentrated in the major municipalities occupying land of relatively high elevation. Much of the development which has occurred since then is located on low-lying land including the barrier islands.

There are 16 incorporated jurisdictions on the barrier islands in Manatee and Pinellas counties, each with its own set of land use controls. Some communities allow high intensity development, while others don't. Generally, the highest intensity of development has occurred on the barrier islands of Pinellas County where multi-story condominiums are common. The barrier islands in Manatee County are less intensely developed, but market pressure, will likely encourage more intense development similar to that which has occurred in Pinellas County.

Other significant concentrations of damage were to the numerous Tampa Bay finger canal communities of Hillsborough, Manatee and Pinellas counties. Dixie, Franklin, Levy and Wakulla counties are more sparsely populated and thus received less damage.

Flood History

Principal flooding problems on the barrier islands and on Tampa Bay generally have occurred because of tidal surge and associated wave action caused by tropical storms and high tides. Since 1921, there have been four storms of significance. In all cases, homes along Indian Rocks Beach and adjoining communities were badly damaged and were accompanied by severe erosion and seawall damage.

Two hurricanes hit in the vicinity of Tampa Bay in 1945, causing extensive damage at Fort Brooke. The tide reached elevations of 14' and 9' respectively.* The 1921 tropical storm resulted in heavy damage in Hillsborough County where the tide reached 9.6'. Considerable flooding occurred during the hurricanes of 1950 and 1960 (Donna), due mainly to intensive rainfall (13.6" in 2 days). In 1972, Hurricane Agnes produced tides of 5.6' at Tampa even though it was 150 miles offshore.

* All references refer to mean sea level.

In the vicinity of Cedar Key, there have only been three events of significance, the worst being the 1896 hurricane which took 28 lives. The damage was mainly due to high tides and wave action. Other storms which affected Cedar Key were Alma in 1966 and Agnes in 1972. Both were five year events and resulted in minor flooding. Half of Cedar Key lies below 10'. It has been determined that tides of 6' and above can cut the city off from the mainland.

Existing Structural Protective Measures

There are very few protective structural measures in Wakulla and Dixie counties. The beach areas and buildings are primarily protected by an established dune system and vegetation.

The Coast of Levy County is largely undeveloped except for Cedar Key. At Cedar Key the city dock is constructed on a revetment. Some of the private properties in the area also have structural protective measures.

In Hillsborough County most of the developed areas are protected by retaining walls. On Manatee and Pinellas County barrier islands seawalls have been constructed to provide a first line of defense. Seawalls are typically constructed to a minimal elevation and to minimal standards. These walls offer support for lawns, patios and buildings. In moderate storms, the walls are often overtopped there by exposing the buildings to water damage.

Governmental Structure

The State of Florida has a very active coastal management program. It is constantly upgrading it's legislation to provide better management of the coastal areas.

Basic program authorities affecting coastal resources are located in three state agencies; Department of Environmental Regulation (DNR), Department of Natural Resources (DNR), and Department of Community Affairs (DCA). These authorities include:

- DCA: Development of Regional Impact and Areas of State Concern; Local Planning Including Coastal Protection Elements and Emergency Management;
- DER: Air and Water Pollution Control and Wetlands Protection; and
- DNR: Regulation of Coastal Construction (seawalls and buildings) and Building Standards; and Lease and Sale of State Owned Submerged Lands.

Recently (May, 1985) the State of Florida undertook a major revamping of its growth management laws and regulations. Coastal management and hazard mitigation received major attention in these recent changes. Several key components of the new legislation should serve to better manage development and redevelopment in ways which reduce future damages and loss of life. Specifically, the new provisions include the following:

- Requirement of a coastal management element of local comprehensive plans including components addressing storm hazard mitigation, post storm reconstruction and the designation of local high hazard coastal areas;

- Creation of a 30-year erosion setback line and prohibition of development seaward of this line; and

- Coastal infrastructure policy which prohibits the state funding of bride and causeways to barrier island which do not already have them, and prohibits the expenditure of state funds for projects within locally designated high hazard areas.

While coastal localities are not required to have prepared their plans until late 1987 at the earliest (for counties) localities should be encouraged to satisfy these requirements as early as possible. However, local actions in this area are contingent upon the State's development of specific standards and guidelines, and the State should move as expeditiously as possible in developing these standards.

PART III: DEVELOPMENT OF RECOMMENDATIONS

The Interagency Hazard Mitigation Team directed the majority of its effort to mitigation opportunities in intensely developed or developing barrier islands of Manatee and Pinellas counties. There was damage in other areas, but, few mitigation opportunities were present or the problems were already being addressed.

The numerous fully developed finger canal communities on Tampa Bay flooded again as they seem to do every couple of years. Here, hundreds of homes had less than a foot or so of water. The insured owners will receive new rugs and the uninsured will certainly buy flood insurance. The Team discussed this problem, but, saw no mitigation opportunities.

The coastal portion of Highway 98 experienced general wash-outs, but, the repair and rerouting of the road was being adequately researched by the state. Cedar Key was almost completely inundated by flood waters, but, the mere enrolling of this fishing village into the National Flood Insurance Program addressed their key problems. The bridge abuttment washed away from the causeway that provided access to St. George Island. The bridge section was being replaced by the time the Team was activated and any opportunity for mitigation was lost.

The Pinellas and Manatee County barrier islands, however, offer both an example of a lost opportunity as well as chance to curb the damage/reconstruction/damage cycle. These extremely vulnerable communities should not have been developed--at least at their current densitites, and most assuredly not to their zoned densities. However, with the exception of parts of Longboat Key and Clearwater which have largely stablized, other communities on these islands are still changing. Hurricane Elena destroyed more of the older smaller structures and in time, market forces will undoubtedly take many more.

In recognizing the dynamic nature of these islands, the Team supports the direction being taken by the newly adopted growth management legislation and is recommending that emergency legislation be enacted which requires the repair of all existing seawalls be constructed to acceptable design standards. At the same time, the Team felt that such walls will not offer protection from major storms and the structural integrity of new buildings should not be dependent on seawalls. In the long term the Team is suggesting that the State and Federal governments address such items as beach nourishment; oyster bed restoration; and re-examine the velocity zone designations on the unincorporated and incorporated Pinellas County Community's Flood Insurance Rate Maps.

The Team was activated on September 19, 1985, a tour of selected sites within the Tampa Bay area was held on September 23, 1985 and

the briefing was held on September 24, 1985. Work elements were presented to the Team Leader before the Team was de-activated on September 26, 1985. A draft report was mailed to the Team and comments were incorporated, if received before September 30, 1985. Formal recommendations were presented to the Federal Coordinating Officer on October 1, 1985.

PART IV: WORK ELEMENTS

1. Require the repair and reconstruction of all shore protective structures (i.e., seawalls, revetments, bulkheads) to meet standards consistent with those required under Chapter 61B-33, Rules and Procedures for Coastal Construction and Excavation (Florida DNR, Division of Beaches and Shores).

2. Encourage communities to adopt and enforce the building design standards of the new Growth Management Act of 1985 immediately.

3. Provide continuing maintenance for protective structures.

4. Require new and substantially damaged structures to be rebuilt land-ward of the 30 year erosion setback line required in the Growth Management Act of 1985.

5. Acquire hurricane damaged properties.

6. Use dredged material for the nourishment of existing beach projects.

7. Adopt and/or modify existing land use controls to reduce the amount of development on barrier islands and other areas particularly vulnerable to hurricane hazards.

8. Support an oyster bed restoration program.

9. Increase the ability of the oyster fishermen to withstand market fluctuations.

10. Establish and enforce a new Velocity zone deliniation line until a restudy can be done by FEMA that accurately portrays the effects of 100-year storm elevations with wave heights.

11. Provide the FEMA Disaster Recovery Manager with the authority to require local agencies to upgrade building code requirements for disaster proofing as a condition to receiving federal funding.

PART IV: WORK ELEMENTS

WORK ELEMENT #1 - SEAWALL RECONSTRUCTION

Require the repair and reconstruction of all shore protective structures (i.e., seawalls, revetments, bulkheads) to meet standards consistent with those required under Chapter 61B-33, Rules and Procedures for Coastal Construction and Excavation (Florida DNR, Division of Beaches and Shores).

Background:

Many lots along barrier island beaches in Pinellas and Manatee counties are armored with protective structures. The protection devices used range from wood piles and small rip rap to massive well engineered structures.

Hurricane Elena destroyed the weaker structures and often the collapse of these in turn caused the adjacent ones to fail. It became obvious to the team that each structure cannot be viewed in isolation, but must be thought of as a link in a much larger chain.

The Florida Department of Natural Resources (DNR) regulates the design of all such structures on or seaward of a Coastal Construction Control Line (CCCL). The integration of a single structure with the other structures is reviewed and approved by DNR as long as the repair and construction is on or seaward of this line. Unfortunately, in Pinellas County, this line has been set at the top of those protection structures that were in place before Elena. Moving a protection device land-ward removes it from DNR control. Local design standards are often considerably weaker and do not assure adequate integration.

Federal grants under Section 402 of P.L. 93-288 to local government (administered by FEMA) and SBA disaster loans to individuals and business for repair and replacement of shore protective structures should be made only on the condition that such work meets the State of Florida standards set by Chapter 16B-33, Rules and Procedures for Coastal Construction and Excavation. Further, in applying the procedures under Federal Executive Order 11988 (floodplain management) for Section 402 grants to local governments, FEMA should consider the conditions of other private shore protective structures in the system and require that those which pose a threat to funded public structures or would be threatened by the improved public structure to be upgraded to Chapter 16B-33 standards.

The communities should be informed that the adoption of more stringent standards could increase the amount of future assistance eligible through the Federal Emergency Management Agency's Public

Assistance Program. The Small Business Administration considers the costs of meeting higher standards eligible if such standards are required by law at the time of the application.

Lead Agency: FEMA and DNR

Financing: FEMA and SBA

Schedule: Immediate

WORK ELEMENT #2 - BUILDING DESIGN STANDARDS

Encourage communities to adopt and enforce the building design standards of the new Growth Management Act of 1985 immediately, or at at minimum require structures on barrier islands be built to Velocity zone standards.

Background:

Hurricane Elena, although less than a 15-year event, overtopped seawalls at numerous locations and destroyed many others. Structures "protected" by these walls were flooded and severely damaged by the erosive effects of wave action.

In Pinellas County, the velocity zone limits established by the National Flood Insurance Program (NFIP) like the CCCL (see Work Element #1 and #10) typically run along the top of the seawalls. The land in back of these seawalls has been designated as an NFIP "A" zone. This zone allows new and substantially improved buildings to be elevated on fill that is "protected" by extremely vulnerable walls.

The newly adopted Growth Management Act of 1985 would require new and substantially improved buildings to be constructed so as not to be structurally dependent on these protection structures. However, the Act didn't become effective until October 1, 1985 and local jurisdictions do not need to adopt the provision of the Act until March 1986. By that time the opportunity to redirect the post-Elena construction effort would be largely lost. These standards are similar to, although more stringent than, the Velocity zone construction standards required of communities participating in the National Flood Insurance Program (44 CFR 59 & 60).

For this reason the Team is recommending that new and substantially improved structures be permitted by communities only if they are

built according to the Growth Management Act of 1985 building and construction standards or to Velocity zone standards.

Communities should recognize that seawalls, although offering limited protection during minor storms, often increases the problem during larger events. Construction to the Standards of the Act will result in buildings that are not dependent on the seawall. Not only will this result in safer construction, but it could provide an opportunity to remove the seawalls when a greater value is placed on beach reclamation then protecting a lawn or terrace.

The adoption of more stringent standards could also increase the amount of funding eligible through the Small Business Administration (SBA). This program considers the cost of meeting higher standards eligible if such standards are required by law.

For those communities unwilling to adopt the provisions of the Act, it is imperative that the substantial improvement rule of the NFIP' regulations (44 CFR, Part 59 & 60) be enforced stringently.

Lead Agency: FEMA, NTHD, State Dept. of Community Affairs, and Local governments.

Financing: None

Schedule: Immediate

WORK ELEMENT #3 - SEAWALL MAINTENANCE

Provide continuing maintenance to protective structures.

Background:

Many municipal protection structures have failed or are in need of repair. These structures include seawalls, revetments and wooden bulkhead structures. Most of these structures were constructed before the DNR design standards were adopted.

Local governments are encouraged to budget for, periodically inspect and provide routine maintenance to their existing protection structures particularly those on barrier islands. Any upgrading of a structure should be based on current DNR design standards to provide the most responsible protection for these barrier islands.

The Team is recommending that as a condition of receiving Federal funds for repair or replacement of bulkheads under Section 402, of Federal P.L. 93-288, local governments be required to submit an inspection and maintenance plan for such structures. Failure to perform the required inspection and maintenance will result in withdrawal of funding.

Lead Agency: FEMA

Financing: None

Schedule: Immediate

ELEMENT #4 - 30 YEAR EROSION LINE

Requires substantially damaged structures to be rebuilt land-ward of the 30 year erosion setback line required in the Growth Management Act of 1985.

Coastal localities and the State of Florida should generally seek to comply with and implement all of the recently enacted growth management provisions which pertain to storm hazard mitigation at the earliest possible date.

Background:

The Growth Management Act of 1985 establishes a 30 year erosion set back line. This 30-year erosion setback requirement has an immediate implication for redevelopment in coastal areas damaged by Elena. Under this new law the Department of Natural Resources must not, as of October 1, 1985, issue any permits for construction in locations which will "be seaward of the seasonal high water line within 30 years after the date of application for such permit."

It is apparent that several damaged structures in Pinellas, Manatee and Franklin counties may be located seaward of such a line and the State should take actions to expedite the application of the erosion control line restrictions to the rebuilding of these structures. Substantially damaged structures (damaged to 50% or greater) should be required to be rebuilt beyond the 30 year erosion line.

The team suggested that communities be notified that early enforcement of the 30 year erosion setback could make individuals eligible for additional assistance from the Small Business Administration. Also, they suggested FEMA and the State explore

ways financial assistance could be used to encourage early enforcement.

Lead Agency: FEMA and SBA

Financing: None

Schedule: Immediate

WORK ELEMENT #5 - ACQUISITION OF DAMAGED PROPERTIES

Acquire hurricane damaged properties.

Background:

The Hazard Mitigation Team recognized the desirability of having undeveloped shoreline on barrier islands. While developed barrier islands cannot be reduced to an undeveloped status, there is the potential to reduce the problem through the public purchase of damaged, high hazard properties.

As a result of Hurricane Elena, a number of structures in highly vulnerable locations were destroyed or substantially damaged. Many of the damaged properties on the barrier islands were older first generation structures clustered in relatively low densities (single family homes, cottages, or small motels). In many of these communities, existing local plans and land use regulations will permit the redevelopment of these areas at significantly higher densities than had existed prior to Elena. Currently land use plans and zoning densities which apply to those properties often exceed the densities of damaged structures by multiples of 4 to 8.

It is reasonable to expect replacement development to more fully utilize the maximum use of these sites. Even with improved design and construction for these replacement structures the net effect would be to place a significantly greater dollar value at risk. The mitigation team supports the intent of Florida's new land management legislation and believes that actions should be taken to insure that damaged sites are not redeveloped at higher densities in order that redevelopment does not result in a greater quantity of property at risk in the next hurricane. Furthermore, the team believes that efforts should be taken to reduce the density of development in hazardous locations where possible.

The opportunities available for reducing the extent of development, and redirecting development away from high hazard areas, will vary

depending on the level of existing development and the extent to which areas have already been committed to developed uses. In Pinellas County, for instance, fewer undeveloped areas exist and the opportunity to substantially redirect growth is not present. By comparison, however, hazardous locations in Manatee County are less developed and the opportunity for a major redirecting of development is greater. State and local planning agencies should recognize these differential opportunities and act accordingly.

Public purchase of land provides one long term solution to this problem. Since it is an expensive solution, alternatives to fee - simple acquisition might be used to achieve similar results. Some of these methods include the purchase of development rights, donation of easements or property and transfer of development rights.

FEMA has a very limited amount of funds available under the 1362 program. The program can be augmented with other public funds. The State Division of Emergency Management is developing a post-disaster land acquisition program and the Team supports this activity.

Lead Agencies: FEMA, Florida, DCA

Financing: State funds and to a limited degree the 1362 program

Schedule: As practicable on a case by basis.

WORK ELEMENT #6 - BEACH NOURISHMENT

Use dredged material for the nourishment of existing beach projects.

Background:

The Corps of Engineers (Jacksonville District) have completed numerous navigation projects throughout the State of Florida (including the Gulf Intracoastal Waterway) which require maintenance dredging for the effective use of commercial and recreational watercraft. Dredging of these navigation projects is currently approved and requires no special authorization.

Over the past 15 years, the Jacksonville District has dredged 44.4 million cubic yards of materials for maintenance of federal navigation projects and for beach erosion control projects. In the past much of the Corps of Engineers dredge spoil has been made available

for beach nourishment and continuation of this practice should be encouraged.

The Corps of Engineers has blanket authority contained in Section 145 of Public Law 94-587 (1976 Water Resources Development Act) providing for placement of sand obtained from dredging operations on adjacent beaches if requested by the State of Florida and in the public interest. Increased costs must be borne by local interests. Similarly, if beach nourishment is considered then local interests may be required to meet certain items of local cooperation which are common to other types of coastal development.

The Interagency HMT agrees that future dredged material from the numerous navigation projects on the Gulf side of the State be considered for beach nourishment activity for the various barrier island beaches.

Lead Agency: Corps of Engineers and state and local governments

Financing: Public Law 94-587 (1976 Water Resources Act) in cooperation with others and local funding sources

Schedule: Ongoing

WORK ELEMENT #7 - GROWTH MANAGEMENT CONTROLS

Adopt and/or modify existing land use controls which to the amount of development on barrier islands and other areas particularly vulnerable to hurricane hazards.

Background:

While Hurricane Elena was not a strong storm in Florida, it produced substantial damage along Florida's barrier islands and in other areas particularly susceptible to hurricane forces (e.g. along the seaward side of Highway 98 in Franklin County). The more extensive the development in these high hazard areas, the greater will be the level of damage from future storms and hurricanes. Furthermore, with increasing development in these areas, more people are placed at risk and must be evacuated. While the evacuation conducted in response to Elena went smoothly, it must be remembered that this hurricane provided extensive lead time and ample opportunity for evacuation, and the full effects of the storm, including the obstructions to evacuation which these present, were not felt on the Florida coast. Future hurricanes will not be so kind.

Reductions in density can be accomplished through a number of means. Modifications to traditional zoning and subdivision

ordinances are perhaps the most feasible avenue for Florida localities. The number of dwelling units permitted per acre on barrier islands could be reduced, or required minimum lot sizes could be increased under subdivision regulations. Local comprehensive plans, which serve as the conceptual foundation for specific land use regulations, should be modified to indicate these reductions to guide development in high hazard areas. Additional measures may surface from a study of the Sanibel Island, Florida experience.

Locating future development along the ocean front exposes property to the greatest cumulative effects of hurricanes and severe coastal storms. The mitigation team feels that local and state agencies should take reasonable actions to locate the most extensive future growth and development (including reconstruction in the safest coastal sites). This can be accomplished through a number of means including coastal setbacks, the clustering of development at maximum distances from the ocean and the placement of future public facilities and investments in safer locations. Local government land use plans and zoning regulations could require greater setbacks from the CCCL. In those areas where more than one building lot depth is included in a development site a requirement for all structures to be placed on the land-ward lot would reduce exposure. The seaward lot could accommodate flat or low improvement such as pools, decks and parking.

Another specific technique which the team feels should be considered in barrier islands and other hazardous areas is the transfer of development potential from higher hazard to lower hazard sites. Under such an arrangement a locality would reduce the permissable units of development in high storm hazard areas (e.g. along the ocean front) and the owners of land within these zones would then be permitted to transfer all or some of this unused development density to parcels in designated receiving zones (safer areas) or to sell these on the open market to others who own land in these receiving zones. A TDR arrangement is an attractive approach to reducing the extent of development in particularly high hazard areas because it preserves for the landowner all or a substantial portion of the value of previously - existing development rights. Of course, as with other land use controls, the opportunity for using this technique along Florida's coast will vary with the degree of existing development. While there appears to be opportunities to apply TDR in barrier island areas of Pinellas County, these opportunities are more abundant in less developed areas, such as along the Manatee County coast or St. George Island.

Lead Agency: Coastal Localities, State of Florida

Financing: N/A

Schedule: Long Term

WORK ELEMENT #8 - OYSTER BED RESTORATION

Support an oyster bed restoration program.

Background:

Ninety-two percent (92%) of Florida's oysters come from Apalachicola Bay. Hurricane Elena destroyed much of this resource. The oyster population is expected to be greatly reduced for the next 3-5 years.

The rapid tidal currents produced by Hurricane Elena washed the oysters from these beds, but, more importantly the swift currents also washed away the loose shell debris to which the oysters attach. If the beds had remained, an aggressive seeding effort could have reestablished oyster population to pre-Elena populations in 18 months. Without a good debris base the populations may never re-establish to similar levels.

The DNR had already applied for assistance from the National Marine Fisheries Service of the Department of Commerce. In addition, the team has begun research into additional funding sources from the Department of Housing and Urban Development.

This is not a mitigation issue, but, the team thought that because of the magnitude of the problem it should be addressed. The State DEM should follow up these funding possibilities with HUD as well as initiate contacts with the Department of Economic Development.

Lead Agency: DCA (DEM) within the context of 406 plan & DNR

Financing: HUD, EDA and National Marine Fisheries Service

Schedule: Spring, 1986

WORK ELEMENT #9 - ECONOMIC ASSISTANCE FOR OYSTERMEN

Increase the ability of the oyster fishermen to withstand market fluctuations.

Background:

Employment issues are seldom if ever addressed within mitigation plans. However, the team felt that Florida was granted a Presidential Declaration partially because of the plight of the

oyster fishermen. Therefore, employment is a legitimate issue to research within the context of the 406 plan.

Oyster fishing in Apalachicola Bay is typically a family run cottage industry. Male members of the family harvest the oysters and the females and children shuck and package the crop. The industry requires little capital or formal education.

These proud highly individualistic family units are effective fishermen, but, are ill equipped to compete in other sectors of the larger American society or even take advantage of traditional public aid assistance. Many families have no tax records and therefore cannot prove that they are eligible for assistance. The illiteracy rate is extremely high and many, particularly males, cannot complete application forms. These family units have been fishing for many generations and knowledge of alternative areas of employment is not common.

This is a very vulnerable population in the best of times, but, with an expected 18 month to 5 year moratorium or greatly reduced level of catch, these family units may not financially survive. The team feels that the State DEM must initiate discussion with a wide range of social service agencies and that the problems of this population be addressed as a major element within the 406 plan.

Lead Agency: DEM

Financing: 406 Plan

Scheduled: 180 days

WORK ELEMENT #10 - INTERIM V-ZONE LINE REVISION

Enforce a new Velocity zone construction line until a restudy can be done by FEMA that accurately portrays the effects of a 100 year storm elevations with wave heights.

Background:

The effects of wave heights and wave energy which occurred during Hurricane Elena, a storm of no more than a fifteen year event, undermined and toppled structures located in the A zones as shown on FEMA's Flood Insurance Rate Maps.

Under the present regulations structures could be built or rebuilt on fill in these A zone areas. Local governments should be

encouraged to establish and enforce a new interim V zone line, further inland than the present extent of the V zone, in order to prevent future undermining of the structure from relatively minor storm events. Structures in this new interim area would be required to be built on pilings, thus, preventing the undermining of the foundation and other destructive effects. This action would reinforce the objectives of Florida's new Growth Management Act of 1985.

FEMA should assist in determining this interim line and immediately initiate a restudy of this coastal area to more accurately depict the extent of a 100-year storm event with wave action.

The eventual enlargement of the V zone would not only require that construction build relative to the hazard, but, would also be more actuarily sound pursuant to the purchase of flood insurance.

Lead Agencies: Local governments, FEMA

Financing: Re-allocation of FIS funds

Schedule: Immediate on the local level, as practicable as possible for FIS restudy

WORK ELEMENT #11 - DISASTER RECOVERY MANAGER AUTHORITY

Provide the FEMA Disaster Recovery Manager (DRM) with the authority to require local agencies to upgrade building code requirements for disaster proofing as a condition to receiving federal funding.

Background:

Hurricane Elena caused considerable damage to seawalls and homes on the barrier islands in Pinellas and Manatee counties. The rebuilding of the seawalls and other structures will probably be accomplished with local building code requirements that do not consider flood proofing measures such as: elevation above sea level, wind and wave loading, etc.

To protect and reduce damages from future storms, the DRM should be given authority to require items, such as building standard measures, that are identified by the Hazard Mitigation Team, and other federal and state agencies as a condition to federal funding.

Except in the context of Executive Order 11988 (floodplain management), NEPA and 44 CFR 205.75(a)(4), (7), (11), the FEMA Disaster Recovery Manager does not have authority to impose mitigation requirements as as condition to funding.

Lead Agency: FEMA

Funding: None

Schedule: Within 90 days

A P P E N D I C E S

APPENDIX A

HAZARD MITIGATION TEAM BRIEFING

September 24, 1985

NAME	AGENCY/ADDRESS	PHONE NUMBER
Jim Aguirre	FEMA Public Information 675 S.W. Ellerwood Issaquah, WA 98027	(904) 681-7591
Dean Alexander	FL DCA 2571 Executive Center Tallahassee, FL 32301	(904) 488-4925
Tim Beatley	Univ. of North Carolina 108 Battle Lane Chapil Hill, N.C. 27514	(919) 962-3074
Wayne Bridges	U.S. Geological Survey 227 N. Bronough St., Suite 3015 Tallahassee, FL 32308	(904) 681-7620 FTS 965-7620
Richard Buck	FEMA, D.F.C.O., Region 10 Federal Regional Center Bothell, Washington 98011	(206) 481-8800 FTS 396-0800
Don Bush	Pinellas Co., Dept. of Planning 315 Court Street Clearwater, FL 33516	(813) 462-4751
Russ Camarda	Div. of Emergency Mgmt., D.C.A. 1720 South Gadsden Street Tallahassee, FL 32301	(904) 488-1900
Frank Carlile	F.D.O.T. P. O. Box 607 Chipley, FL 32428	(904) 638-0250
Fred Cramer	NWS, Municipal Airport 3230 Capital Circle SW Tallahassee, FL 32304	(904) 576-1811 FTS 965-7601
Dan Evans	Div. of Emergency Mmgt., DCA 1720 S. Gadsden St. Tallahassee, FL 32301	(904) 488-1900
Bob Freitag Federal Team Leader	FEMA Region 10 Federal Regional Center Bothell, Washington 98011	(206) 481-8800 FTS 396-0800

NAME	AGENCY/ADDRESS	PHONE NUMBER
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Bill LeBlanc	Div. of Emergency Mgmt., D.C.A. 1720 S. Gadsden St. Tallahassee, FL 32301	(904) 488-1900
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Brad Loan	FEMA RIV, Atlanta 1371 Peachtree St., Suite 736 Atlanta, GA 30278	FTS 257-7066
Bob McBeth	FEMA Region 4 1371 Peachtree St., Suite 736 Atlanta, GA 30309	FTS 257-2391
Ron McConnell	FEMA Region 10 Federal Regiona Center Bothell, Washington 98011	(206)6481-8800 FTS 396-0800
David McDevitt	Div. of Emergency Mgmt., DCA 1720 S. Gadsden St. Tallahassee, FL 32301	(904) 488-1900
Bill Millhouser	Office of Ocean & Coastal Resource Management NOAA/Dept. of Commerce 3300 Whitehaven St., N.W. Washington, D.C. 20235	(202) 154-7546 FTS 254-7546
Bob Nave State Team Leader	Div. of Emergency Mgmt., DCA 1720 S. Gadaden St. Tallahassee, FL 32301	(904) 488-1900

APPENDIX A (CONT'D)

NAME	AGENCY/ADDRESS	PHONE NUMBER
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Dan Trescott	Div. of Emergency Mgmt., DCA 1720 S. Gadsden St. Tallahassee, FL 32301	(904) 488-1900
John Schneider	Marine Fiseries Division Department of Natural Resources DNR, HQ Tallahassee	(904) 488-5471
Wm. Jay Troxel	DOI, U.S. Fish & Wildlife Serv. 1612 June Ave. Panama City, FL 32405	(904) 769-0552 FTS 9465215/6
Bruce Trowbridge	FEMA Region 10 Federal Regional Center Bothell, Washinton 98011	(206) 481-8800 FTS 396-0800
Bill Whitfield	DNR, Beaches and Shores DNR HQ, Tallahassee, FL	FTS 487-2203
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APPENDIX B

HADZARD MITIGATION
TEAM BREIFING
FEMA-743-DR-FL

Monday 9/23/85

Tour of selected sites	

Tuesday 9/24/85

Welcome	Joan Hodgins (FCO) Gordan Guthrie (SCO)
Purpose of Meeting	Bob Freitag (FEMA, Leader) Bob Nave (DEM, Leader)
Introduction of team members	
Description of the Disaster	
Hurricane	Fred Cramer (NWS)
Storm Frequency	Vic Smith (COE) Edward Eckstein (DEM)
Damages--Video tape & slide show	Bill LeBlanc (DEM) Bruce Trowbridge (FEMA) John Schneider (DNR)
Backgrown Information	
Description of Area	Mike Wonchicle (Pinellas Co.) Barbara Hoagland (ARPC)
Governmental Structure--Laws, Regulations & Grants	Dave Worley (DER) Ralph Clark (DNR) Dean Alexander (DCA) Bill Millhouse (NOAA)
Existing Protective Structures	Vic Smith
Flood History	Dan Trescott (DEM) Bob McBeth (FEMA)
Define Issues	
Assignments	

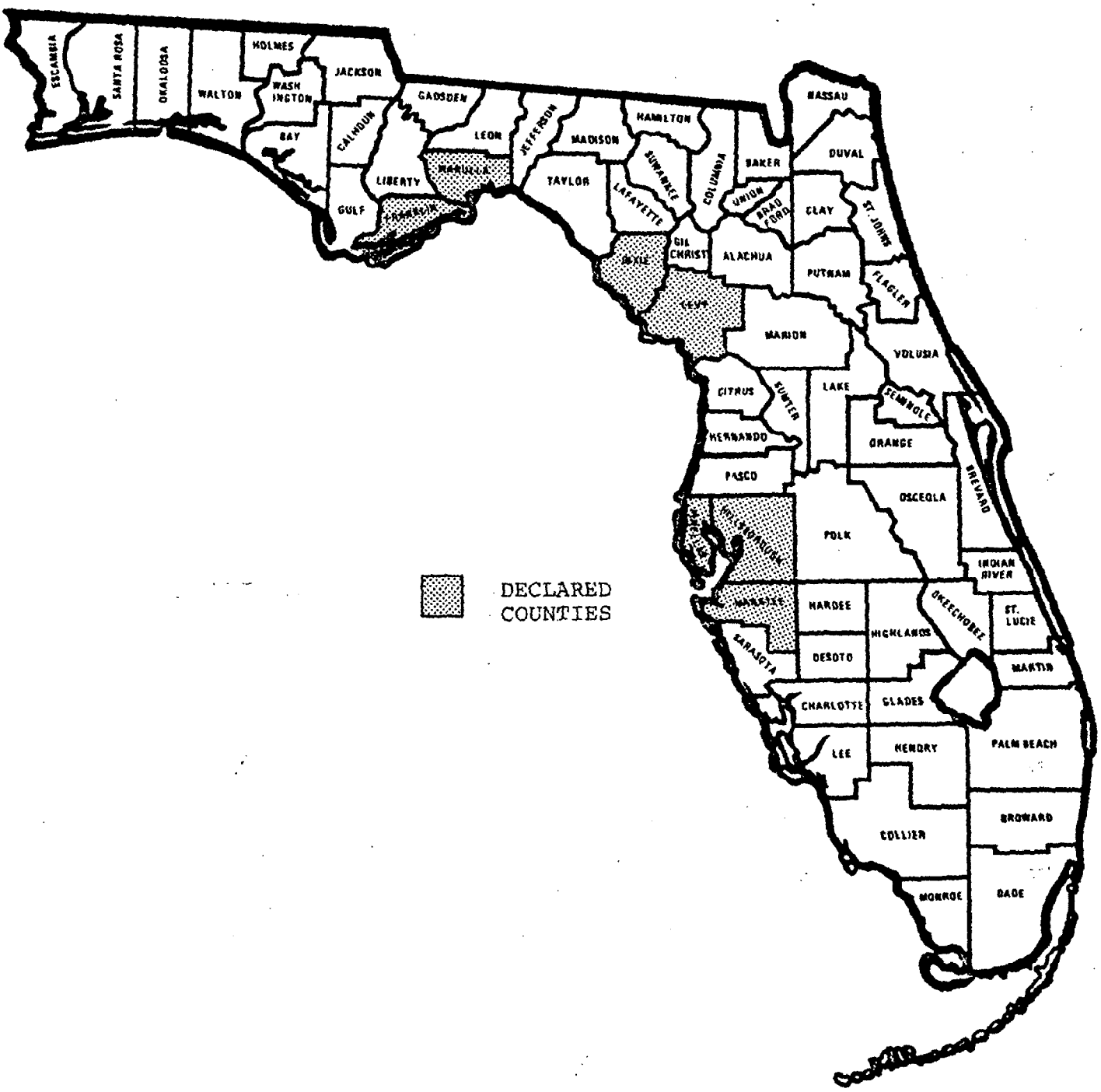
Wednesday 9/25/85

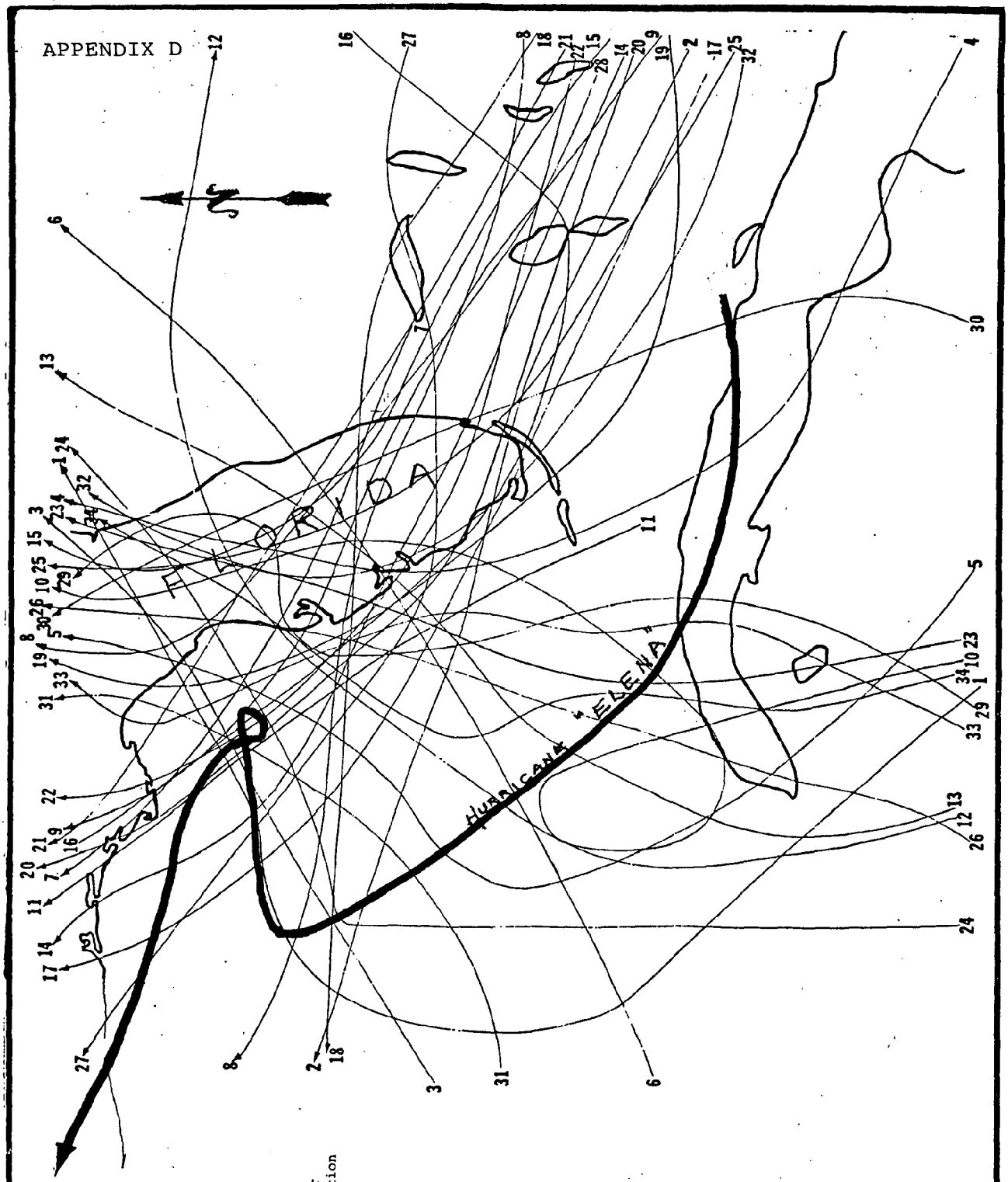
Formulate Recommendations	
Assign Areas of Responsibilities	

Thursday 9/26/85

Confirm Recommendations	

APPENDIX C


ESCAMBIA
SANTA ROSA
OKALOOSA
WALTON
HOLMES
WASH INGTON
JACKSON
BAY
CALHOUN
GADSDEN
LEON
JEFFERSON
MADISON
HAMILTON
SUWANNEE
COLUMBIA
BAKER
NASSAU
DUVAL
LIBERTY
WAKULLA
TAYLOR
LAFAYETTE
UNION
BRADFORD
CLAY
ST. JOHNS
GULF
FRANKLIN
DIXIE
GILCHRIST
ALACHUA
PUTNAM
FLAGLER
LEVY
MARION
VOLUSIA
CITRUS
SUMTER
LAKE
SEMINOLE
HERNANDO
ORANGE
PASCO
OSCEOLA
BREVARD
POLK
INDIAN RIVER
HARDEE
HIGHLANDS
OKEECHOBEE
ST. LUCIE
DESOTO
MARTIN
CHARLOTTE
GLADES
LEE
HENDRY
PALM BEACH
BROWARD
COLLIER
MONROE
DADE
DECLARED COUNTIES



Note: Refer to Table 3 for identification and description of tracks by index number.

TRACKS OF HURRICANES PASSING WITHIN 100 NAUTICAL MILES OF TAMPA BAY: 1886 - 1979

FIGURE 8

APPENDIX D (Cont'd)

TABLE 3

HURRICANES PASSING WITHIN 100 NAUTICAL MILES OF TAMPA BAY: 1886-1979

Figure 8 Index	Starting Date	Storm's Name	Closest Point of Approach (Lat.)	(Long.)	Date at Closest Point of Approach	Distance to Closest Point of Approach (NM)	Wind Speed (MPH)
1	7/14/1886	Not Named	28.5N	83.4W	7/18/1886	63	98
2	8/14/1888	Not Named	26.4N	83.0W	8/17/1888	72	104
3	10/08/1888	Not Named	28.6N	84.0W	10/10/1888	88	97
4	9/18/1894	Not Named	27.4N	81.7W	9/25/1894	56	122
5	9/22/1896	Not Named	28.2N	83.9W	9/29/1896	71	112
6	10/07/1896	Not Named	26.5N	82.0W	10/09/1896	79	98
7	8/02/1898	Not Named	28.0N	82.6W	8/02/1898	26	80
8	8/04/1901	Not Named	27.2N	82.8W	8/12/1901	24	76
9	9/09/1903	Not Named	27.7N	82.8W	9/12/1903	7	75
10	10/09/1910	Not Named	27.6N	81.8W	10/18/1910	51	81
11	8/09/1911	Not Named	27.0N	83.7W	8/10/1911	61	81
12	10/20/1921	Not Named	27.8N	83.1W	10/25/1921	21	124
13	11/29/1925	Not Named	27.2N	82.5W	12/01/1925	31	75
14	9/11/1926	Not Named	27.0N	83.1W	9/19/1926	40	125
15	9/06/1928	Not Named	28.1N	81.8W	9/17/1928	61	129
16	9/22/1929	Not Named	27.3N	83.5W	9/29/1929	44	104
17	8/26/1932	Not Named	26.8N	83.2W	8/30/1932	51	81
18	8/31/1933	Not Named	28.2N	82.2W	9/04/1933	48	94
19	8/29/1935	Not Named	27.4N	83.2W	9/04/1935	25	114
20	7/27/1936	Not Named	27.0N	83.3W	7/30/1936	48	77
21	8/07/1939	Not Named	28.4N	82.4W	8/12/1939	51	75
22	10/03/1941	Not Named	27.4N	83.2W	10/06/1941	26	114
23	10/12/1944	Not Named	27.6N	82.3W	10/19/1944	28	98
24	6/20/1945	Not Named	28.6N	83.3W	6/24/1945	66	106
25	9/12/1945	Not Named	27.8N	81.8W	9/16/1945	54	127
26	10/05/1946	Not Named	27.5N	82.7W	10/08/1946	5	106
27	9/04/1947	Not Named	26.7N	83.4W	9/18/1947	63	98
28	8/23/1949	Not Named	28.3N	82.2W	8/27/1949	52	121
29	9/01/1950	Easy	27.9N	83.1W	9/05/1950	25	127
30	10/13/1950	King	28.1N	81.3W	10/18/1950	85	82
31	10/18/1950	Love	28.4N	83.7W	10/21/1950	70	78
32	8/29/1960	Donna	27.5N	81.9W	9/11/1960	46	130
33	6/04/1966	Alma	27.3N	83.3W	6/09/1966	33	113
34	10/13/1968	Gladys	28.1N	83.3W	10/18/1968	43	81

SOURCE: National Hurricane Center, Miami, FL

APPENDIX E

Small Business Program Information:

It is SBA's policy that:

> all property being restored by disaster loan, must meet applicable building codes and specification in effect at time of applying for the building permit, and reasonable (minimum) standards of decency, safety and sanitation.

It is possible that an approved loan may be increased to provide funds required to restore the structure to meet additional building code requirement passed by the appropriate authority after the application was approved but before the applicant applied for a building permit.

S.O.P. CONTINUATION SHEET	S.O.P. SECTION	S.O.P. NO.	REV
	50	30	2

f. For protective devices:

(1) The cost of protective devices such as retaining walls, fences, seawalls, protective dunes, etc., cannot be included in the use of DL funds unless one of the following applies:

(a) Such devices were previously in place and were destroyed or damaged by the disaster.

(b) They are required by local building codes or ordinances as a condition for issuance of a building permit.

(c) The use of such devices is the only feasible or practical method of repairing structural damage.

(2) Those communities that have been designated as "flood prone" by the Federal Insurance Administration (FIA) and are participating in the flood insurance program administered by FIA are required as a condition of their participation to impose strict building codes for the flood hazard areas. The flood proofing that is required by these communities may be included in the amount of the loan.

g. Contents of Residential Structures. No upgrading in either size or quality is permitted for furniture, appliances or other personal property.

h. Contents of Business Structure. No upgrading in either size or quality is permitted for furniture or fixtures, machinery or equipment or other business property.

36. RELOCATION

a. Relocation for all disaster victims regardless of whether relocation is voluntary or involuntary, must be within the United States, its territories or possessions, or the Commonwealth of Puerto Rico.

b. When the applicant intends to purchase one-to-four family residential real estate, the provisions of the Real Estate Settlement Procedures Act (RESPA) become applicable. See paragraph 70 below.

c. The 85 percent lending limit contained in Section 7(c)(4) of the Small Business Act applies to eligible involuntary and voluntary relocation costs incurred by a business applicant.

d. The amount of relocation assistance permitted depends on whether relocation is voluntary or involuntary. This is usually determined by whether or not the owner/disaster victim can get a building permit to repair or replace the damaged structure on the disaster site.

(1) An involuntary relocation occurs when local building codes prohibit, for any reason, either repair or reconstruction and a building permit will not be issued. The owner/disaster victim has, therefore, sustained total destruction regardless of the percentage of the structure actually destroyed by the disaster.

(a) Involuntary relocation costs are limited to:

(i) Cost to replace the "destroyed" structure(s), or,

(ii) Cost to move damaged structure(s) to the relocation site and repair same if applicant wishes to do so, provided these costs do not exceed the cost to build a comparable replacement structure on the relocation site.

(b) Cost of comparable relocation site (no upgrading permitted).

(c) Additional costs to meet building code at relocation site.

(d) Moving expenses for contents not to exceed $500 for residential applicants or $1000 for business applicants unless additional cost is justified in loan officer's report.

S.O.P. CONTINUATION SHEET	S.O.P. SECTION	S.O.P. NO.	REV
	50	30	2

(e) The Loan Authorization will require that in the event of a sale of all or any part of the "destroyed" property, the net proceeds will be applied IOM to the SBA loan unless the borrower demonstrates to the satisfaction of SBA that such use of proceeds would constitute an undue hardship.

(2) A voluntary relocation occurs when the owner/disaster victim can repair or replace the damaged structure on the disaster site, but elects to move to another location.

(a) The amount of the disaster loan cannot exceed the cost of repairing the damaged property at the original location plus eligible refinancing, and our collateral position cannot be less favorable than it would have been if the damaged property had been repaired (e.g., if SBA would hold no less than a second mortgage behind a $20,000 first mortgage if the damaged property were restored, the Agency should hold a mortgage behind prior lien(s) totaling no more than $20,000 which encumber the relocation site). Those disaster victim/mortgagors who can and do "walk away" from their obligations may borrow only the lesser of their net disaster loan eligibility or their "cash" equity (see subparagraph 15j).

(b) Whenever a disaster victim voluntarily relocates the approved disaster loan may not include upgrading costs required to comply with code requirements at the disaster site [e.g., elevating (raising) the structure].

(c) If an applicant with less than total damage elects VOLUNTARY relocation, SBA will require the applicant to arrange for the sale of the damaged property, or to arrange supplemental financing, or inject cash as a condition of SBA loan approval, so that the borrower would have sufficient funds to acquire the new property and construct the replacement building. The net proceeds from the future sale of the disaster site will be applied to the SBA loan in inverse order of maturity (IOM) unless the borrower demonstrates to the satisfaction of SBA that such use of proceeds would constitute an undue hardship.

(3) Tenants who relocate are eligible to borrow only the amount that would have been required to restore at the disaster site.

If the prior lienholder is unwilling to transfer his lien to the new location, SBA will take a first mortgage on the new parcel and a second lien on the damaged property.

f. Owner/Disaster Victims Located in Identified Special Hazard Areas (i.e., Special Flood Hazard Areas, M Zones or E Zones.

(1) In communities that do not participate in the National Flood Insurance Program (NFIP), such owner/disaster victims, during the twelve months which follow the date on the Flood Hazard Boundary Map (FHBM), are eligible for the same benefits as owner/disaster victims not located within a delineated special hazard area. One year after the date on the FHBM, the community comes under sanction by the NFIP until that community joins the NFIP.

(2) In communities under sanction and/or under suspension, owner/disaster victims are eligible for loans under the provisions for voluntary or involuntary relocation as appropriate, except that existing mortgages cannot be refinanced.

g. Available Vacant Foreclosed Houses. When applicants relocate, disaster office personnel should recommend (particularly to applicants with limited incomes) that they look at any available FHA, VA or FmHA foreclosures in the disaster area. Such applicants would probably be able to purchase an acceptable foreclosed house for considerably less than the cost to build a replacement home and less than the cost to purchase other existing houses.

h. Notice of Disqualification. Whenever relocation of a disaster victim is mandatory (i.e., involuntary, e.g., can't obtain a building permit or condemnation proceedings have been or will be instituted against the damaged property) or if voluntary relocation from property located within a SFHA, an M Zone or an E Zone, in a community under sanction, the borrower must place of public record a notice that the "abandoned" real property is ineligible for future SBA disaster loan assistance to restore damage inflicted by any type disaster.

37. ALLOWABLE UPGRADING

a. Any desired upgrading which will be paid for through use of the applicant's own funds and/or private credit is permitted, provided SBA's collateral position is not less favorable then it would be if such upgrading was not allowed and the applicant has the ability to repay all debt.